

## **Low Energy Nuclear Reactions in Plasma and Accelerator Environments**

### **Executive Summary:**

The project “Low energy nuclear reactions in plasma and accelerator environments” aims at broadening the scientific portfolio of the experimental nuclear physics group at the University of Notre Dame, establishing next to the existing initiatives in nuclear astrophysics and nuclear structure physics a program in nuclear reaction physics and applications.

The projects seeks to investigate the nature of low energy nuclear reaction processes at the interface of nuclear and atomic interaction, notably electron screening effects in solid target and gas target accelerator environments as well as screening effects in laser plasma environments as provided by the OMEGA and NIF facilities at the University of Rochester and Livermore National Laboratory. The projected study of low energy nuclear reaction mechanisms is of relevance for nuclear astrophysics, fusion energy generation, and high density plasma physics. It provides unique conditions for training the next generation of nuclear scientists in radiation physics and chemistry, detector development, low level counting, as well as fast data handling and processing.

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